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'Understanding volcanoes and society: the key for risk mitigation'



Political volcanology? Thinking holistically about risk, uncertainty and responsibility

Amy Donovan¹

¹King's College London

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This paper uses ideas from political ecology, human geography and science studies to analyse some of the challenges that volcanologists face in the public sphere. Social scientists in a wide range of disciplines including volcanology have demonstrated that, in practice, the ideal linear uptake of “science” into policymaking very rarely succeeds, because of the nature of science, politics and the social. There are several reasons for this. First, science can be used in risk assessment, but risk assessment is not strictly science in the traditional sense because risk is not logically equivalent to science. This is not to say that science is not useful for understanding risk, but rather that it is only part of the suite of tools we need to assess risk. Secondly, the high uncertainties that typically characterise volcanic crises are complex and not always quantifiable. Volcanologists have typically distinguished between aleatory uncertainty and epistemic uncertainty. A special case that overlaps with epistemic uncertainty but also transcends it is social uncertainty. Social uncertainty can take many different forms, from differences of opinion between volcanologists to the challenge of anticipating how members of the population might react in a given situation. Aspects of these uncertainties are unknowable and incalculable – they have been described as “indeterminacy” or “ambiguity”. These arguments do not negate or challenge the importance of probabilistic risk assessment in volcanology. Rather, they suggest that the complexity and uncertainty that surround such assessments require a collaborative approach rather than a delineated one. This paper presents a framework for thinking more holistically about volcanoes in the social system, and proposes approaches that might aid scientists involved in providing advice for governments.